

## **6.0 REGULATORY IMPACT REVIEW**

The Regulatory Impact Review (RIR) provides analyses of the net economic benefits and costs of each alternative to the nation and the fishery as a whole. This section assesses the impacts of the alternatives presented in this document. Most of the analyses focus on the pelagic longline fishery in the NED area during the first and fourth quarters (October 1 through March 31) because this is the expected length of the emergency rule. The target species of this part of the pelagic longline fishery is swordfish. There is a qualitative discussion on the part of the fishery located in the MAB and NEC statistical areas as well. These parts of the pelagic longline fishery constitute a mixed fishery with swordfish, bigeye tuna, yellowfin tuna, and albacore tuna constituting the target species. In addition, summary information on the pelagic longline fishery as a whole is presented. In addition to the fishermen, the related industries including dealers, processors, bait houses, and equipment suppliers are also part of this fishery.

Certain elements required in an RIR are also required as part of an environmental assessment (EA). Thus, this section should only be considered part of the RIR. The rest of the RIR can be found throughout this document. Section 1 of this document describes the need for action and the objectives of the regulations. The alternatives considered are described in Section 5 and include measures designed to reduce bycatch of sea turtles and measures designed to reduce post-release mortality of sea turtles.

### **6.1 Analyses of management measures to reduce bycatch of sea turtles**

Cramer and Adams (2000) present information on the 1998 fishing activity in the NED area (Table 6.1). This information states that 15 vessels fished in the NED area in 1998, down from 22 active vessels in both 1996 and 1997. In 1998, these 15 vessels landed 19.5 percent of all the swordfish landed by the U.S. Atlantic pelagic longline fleet (210 active vessels in fleet in 1998). Using the ex-vessel price information reported to the Northeast Fisheries Science Center by dealers in the northeast and MAB regions<sup>1</sup>, the total annual gross revenues from swordfish alone for these 15 vessels were approximately \$2.6 M in 1998 with an average annual gross revenue of \$172,029 per vessel. In the NED area, bigeye tuna is the species landed the most after swordfish. This species brought in total gross revenues of \$328,779 in 1998 with an average annual gross revenue of \$21,919 per vessel. Under status quo, NMFS would expect the economic dynamics of this fishery to remain unchanged.

The 1998 and 1999 pelagic logbook reports indicate that the U.S. commercial fishery in the NED area is composed of fishermen who hold a directed swordfish limited access permit. All of these fishermen hold an Atlantic tunas longline category permit. Most of the fishermen who reported

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<sup>1</sup> The information reported by northeast dealers does not allow for the average weight of each species to be calculated. Instead, the average weight information was obtained from databases maintained by the Southeast Fisheries Science Center and may not be indicative of the actual average weights of fish caught in the northeast regions. However, for the comparative purposes used here, the actual average weight is not needed.

landings from this area also hold directed shark limited access permits, although a few hold incidental shark limited access permits. In the time period between January 1, to March 31<sup>2</sup>, 1998, and October 1, to December 31, 1998, 12 vessels made 13 trips to the NED area. During the same time periods in 1999, 8 vessels made 10 trips to the NED area. Six vessels made trips in both years. In 1998, the swordfish landings made by these vessels during this period were approximately 28 percent of all those landed in 1998 from the NED area or 6 percent of all swordfish landed in 1998 from the entire fleet.

Based on the landings reported in the pelagic logbook and the ex-vessel price information reported from dealers in the northeast and MAB regions, the gross revenues from October 1 to March 31 in the NED area from this fishery are estimated to be \$819,620 in total and average \$68,302 per vessel in 1998, and \$794,678 in total and average \$99,335 per vessel in 1999 (Table 6.2). Thus a closure of this entire area could result in a decrease in the average gross revenues per vessel of approximately 35 to 51 percent. Unless fishermen could catch as many swordfish in open areas and make up these losses, this revenue would be lost. In other words, closing the entire NED area from October 1 through March 31 could have a large negative economic impact on fishermen who normally fish in this area during this time of year and on the dealers, processors, bait houses, and suppliers who rely on the fishing activities of the fishermen.

Eleven vessels fished in the L-shape area in 1998 and seven vessels fished in the L-shape area in 1999. The total gross revenues for these vessels from October 1 to March 31 are estimated to be \$525,771 in total and average \$47,797 per vessel in 1998, and \$548,439 in total and average \$78,348 per vessel in 1999 (Table 6.2). Closing this L-shape area from October 8 to March 31 could cause these vessels to lose approximately 70 to 79 percent in average gross revenues per vessel in the first and fourth quarters of 1998 or 1999 or 25 to 40 percent of annual gross revenues per vessel. However, this assumes that these fishermen would not fish in any other area of the NED area. This is not realistic especially considering the fact that the logbooks indicate the fishermen already fish both inside and outside the L-shape area within the same trip. NMFS believes that, although some revenues may be lost as a result of this closure, fishermen may be able to regain some of their revenues by fishing outside the closed area in the NED area. However, given the fact that the average gross revenues in 1998 and 1999 from the area outside the L-shape area is over 65 percent less than the average gross revenues from inside the L-shape area (Table 6.2), NMFS recognizes that a large part of the revenues from fishing in the NED area could be lost.

Closing this L-shape area is not expected to increase costs to these vessels because they already fish in and out of this area regularly. To the extent that fishermen may need to travel further in order to transit the area during the closure, this management measure may increase costs.

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<sup>2</sup> The emergency rule which would implement the final actions in this EA is expected to last 180 days. If the final time/area closure action is to begin on October 8, the emergency rule would expire on approximately March 31. For this reason, all of the analyses for the time/area closure alternatives only consider data reported between October 1 and March 31.

However, to the extent that this area is a turtle hotspot, the closure may decrease the time spent on releasing turtles. Thus, closing the L-shape may not have as large a negative economic impact on the fishermen and related industries as closing the whole NED area but may still have a negative economic impact. Given the fact that a portion of an area historically high in swordfish catch will be closed, NMFS has determined that the impact on the fishery and its related businesses could be significant under E.O. 12866.

Because the time restrictions considered are based around the swordfish fishery, the restrictions on the time of day fishermen set and haul gear would not be expected to change gross revenues or costs in the NED area unless this restriction changes catch rates of target species. However, restrictions on the time of day in areas outside the NED area could have large economic impacts. The MAB and NEC areas, which are both above 35° N. lat., are dependent on tunas as well as swordfish (Table 6.1). In general, the tuna fishery is conducted during the day. Depending on the times chosen, these restrictions could eliminate the tuna fishery in these areas. In 1998, the NEC and MAB areas caught approximately 73 percent of all the albacore tuna, 62 percent of all the bigeye tuna, 24 percent of all yellowfin tuna, and 15 percent of all swordfish caught by the U.S. Atlantic pelagic longline fleet (Table 6.1). Thus, these restrictions could have a substantial economic impact on the fishermen and on the dealers, processors, bait houses, and suppliers who rely on the fishing activities of the fishermen. In addition, they could have a substantial impact on consumers who would have to rely more on imported tuna.

Restrictions on the temperature of water fishermen are allowed to set gear could have negative economic impacts both in terms of gross revenues and costs. Temperature restrictions could force some fishermen to buy additional equipment in order to keep track of the temperature more accurately. In addition, this restriction could force fishermen to search longer for a suitable fishing area and thus spend less time at sea actually fishing. Depending on the currents and relative water temperatures, fishermen may need to search for new areas each time they set their gear. Additionally, there are indications that blue shark bycatch increases as temperature decreases. This could cause fishermen to lose hooks to blue sharks, thus increasing the cost of gear replacement and decreasing the gear available during each set to catch the target species. It is also possible that the target species may not be as abundant in colder waters or may encounter hooked blue sharks instead of hooks. If this happens, the number of target fish caught per set could decrease.

Table 6.1 The number of swordfish and tunas caught in the NED, NEC, and MAB areas in 1998. (Source: Cramer and Adams, 2000)

Area	Swordfish	Yellowfin tuna	Bigeye tuna	Bluefin tuna	Albacore tuna	Number of vessels
NED	15,641	96	1,548	27	103	15
NEC	5,904	4,644	5,317	312	1,474	39
MAB	8,216	8,442	6,549	932	3,875	63
All areas	91,161	55,215	19,126	1,542	7,307	210

Table 6.2 The average gross revenues of vessels in the NED area.

Area	Time Period considered	Average gross revenues		Average gross revenues per vessel	
		1998	1999	1998	1999
NED area	Oct. 1 - March 31	\$819,620	\$794,678	\$68,302	\$99,335
L-shape area	Oct. 1 - March 31	\$525,771	\$548,439	\$47,797	\$78,348
Outside L-shape area	Oct. 1 - March 31	\$293,849	\$246,240	\$36,731	\$35,177
L-shape area	Oct. 1- Oct. 7	\$102,535	\$97,571	\$14,648	\$24,393
Outside L-shape area	Oct. 1- Oct. 7	\$152,887	\$102,593	\$25,481	\$34,198
L-shape area	Oct. 8 - March 31	\$423,236	\$450,868	\$47,026	\$64,410
Outside L-shape area	Oct. 8 - March 31	\$140,961	\$143,647	\$23,494	\$23,941

## 6.2 Analyses of measures to reduce post-release mortality of sea turtles incidentally captured

Requiring the use of line clippers and dipnets to release hooked turtles is not expected to increase costs substantially. A similar rule for the fisheries in the Western Pacific estimated that the total cost for the materials to fabricate and/or purchase line clippers and dipnets to be \$250 (65 FR 16347). Use of line clippers and dipnets to release sea turtles is unlikely to change catch rates of target catch; therefore, this management measure is unlikely to change the gross revenues of fishermen.

While specific line clipper devices are not available in the commercial market, line clippers meeting the minimum design standards of this proposed rule may be fashioned from readily available tools and components. One model is an extended reach garden pruning tool, which may be adapted to meet the minimum prescribed standards. Another model, which may be easily

fabricated is the Arceneaux Line Clipper shown in Appendix 2. Consequently, line clippers may be fabricated or obtained and put into use in the fishery with little expense or delay.

Similarly, requiring a dehooking device is unlikely to increase costs or change gross revenues substantially. The HMS FMP and a recent search on the web indicate that dehooking devices for this fishery cost between \$45 and \$90.

Requiring the use of circle or corrodible hooks could increase the cost of fishing. While circle hooks cost less than “J” hooks (\$0.25 versus \$0.79, respectively), this requirement would force fishermen to replace all of their hooks immediately instead of over time. Thus, this requirement could increase costs in the short-term. The FSEIS estimates that replacing “J” hooks with circle hooks could cost each vessel \$9,121. While the cost of a corrodible hook is unknown, NMFS expects that this requirement would have similar costs in the short-term. Additionally, corrodible hooks may need to be replaced more often than either “J” hooks or circle hooks further increasing the costs to fishermen over time. However, to the extent that some fishermen already use corrodible hooks (non-stainless steel hooks), this alternative may not change the cost of fishing (depending on the definition of a corrodible hook).

In addition to impacting fishermen, either one of these requirements could have a large impact on suppliers who may have already stocked up on “J” hooks and may be unable to replace stocks with circle or corrodible hooks before the effective date of the emergency rule.

In addition, requiring the use of circle or corrodible hooks may impact catch rates. At this time, NMFS is unable to estimate changes in catch rates. However, if circle hooks or corrodible hooks are not strong enough to hold a large swordfish, gross revenues may decrease.

### **6.3 Conclusion**

The final actions described in this EA have been determined to be significant for the purposes of E.O. 12866. While closing this area is likely to cause some individual fishermen, processors, dealers, and suppliers to experience a slight increase in costs and possibly a large decrease in gross revenues, this closure might affect the fishery as a whole because the fishermen can and do fish in other areas, this closure does not limit the amount of fish that may be landed, and this closure is limited to the length of the emergency rule. NMFS expects that the change in fishing costs for those fishermen who continue to fish in the NED will be relatively small because the fishermen already fish in and out of the L-shape area regularly. Additionally, the line clipper and dipnet requirement add a one time increase to fishing costs. A summary of the expected net economic benefits and costs of each alternative can be found in Table 6.3.

Table 6.3 Summary of net economic benefits and costs for each alternative considered

Management measure	Net Economic Benefits	Net Economic Costs
Close the L-shape area for duration of emergency rule beginning October 8 <b>FINAL ACTION</b>	To the extent that turtle bycatch may be decreased, handling time of turtles may decrease. This may decrease the time other species spend on the line thus increasing quality. Any decrease in turtle bycatch could increase benefits to society as a whole in terms of existence value. Otherwise, no benefits to U.S. fishermen.	May need to fish further out than normal. May have a reduction in gross revenues because fishermen will be forced to fish in less productive areas.
Close the entire NED area from October 1 to December 31	Fishing costs could decrease substantially if fishermen decide to fish in open areas closer to shore and in less dangerous areas. In terms of existence value, this alternative would have more benefits to society than the smaller closure. Otherwise, no benefits to U.S. fishermen.	Revenues that are normally made are lost to fishermen, processors, and consumers.
Time and Temperature gear deployment restrictions	If the tuna fishery is eliminated, tuna importers may benefit as demand for imported tuna increases. No benefits for U.S. fishermen and related industries. If turtle takes are reduced, society benefits in terms of existence value.	Depending on time chosen, may eliminate the tunas fisheries above 35° N. This will impact the entire fishery and consumers. Depending on the temperature restriction, fishermen may take longer to find a suitable fishing area; therefore, less time fishing leading to reduced revenue.
Prohibit use of pelagic longline gear in Atlantic by U.S. fishermen	Importers may benefit as demand for imported tunas and swordfish increases. No benefits for U.S. fishermen and related industries. As this alternative would reduce the number of sea turtle takes the most, this alternative would have the greatest the benefits to society in terms of existence value.	Loss of fishery in Atlantic putting fishermen, processors, bait houses, and suppliers out of business. Negative impacts may also be felt on consumers as import prices may rise.
No action (status quo)	No change.	No change.
Require line clippers <b>FINAL ACTION</b>	Minimal.	Minimal.
Require dipnets <b>FINAL ACTION</b>	Minimal.	Minimal.
Require dehooking device	Minimal.	Minimal.

Management measure	Net Economic Benefits	Net Economic Costs
Require corrodible hooks	Minimal.	If fishermen are not already using corrodible hooks, would require immediate replacement of all hooks. In long-term, could require hooks to be replaced more often than stainless steel hooks. If hooks are not strong enough to hold fish, could result in a loss in revenues.
Require circle hooks	In long term, circle hooks cost less to replace than “J” hooks.	Would require immediate replacement of all hooks. If hooks are not strong enough to hold fish, could result in a loss in revenues.

## 7.0 COMMUNITY PROFILES

The National Environmental Policy Act (NEPA) requires federal agencies to consider the interactions of natural and human environments by using “a systematic, interdisciplinary approach which will ensure the integrated use of the natural and social sciences ... in planning and decision-making” (NEPA §102(2)(a)). The Magnuson-Stevens Act also requires consideration of social impacts. Federal agencies should address the aesthetic, historic, cultural, economic, social, or health effects which may be direct, indirect, or cumulative. Consideration of the social impacts associated with fishery management measures is a growing concern as fisheries experience variable participation and/or declines in stocks.

Social impacts are the consequences to human populations that follow from some type of public or private action. Those consequences may include changes in “the ways in which people live, work or play, relate to one another, organize to meet their needs and generally cope as members of a society ... ” (Interorganizational Committee on Guidelines and Principles for Social Impact Assessment, 1994:1). In addition, cultural impacts may involve changes in the values and beliefs that affect the way that people identify themselves within their occupation, their communities, and society in general. Social impact analyses help determine the consequences of policy action in advance by comparing the status quo with the projected impacts. Public hearings, scoping meetings, and Advisory Panel meetings provide input from those concerned with the impacts of a proposed management action.

The following towns were considered for in-depth analysis during the emergency rule drafting process: Gloucester, MA; New Bedford, MA; Barnegat Light, NJ; Wanchese, NC. These towns were selected due to the importance of the fishing industry, particularly swordfish and tuna, to the community. Much of this information presented below is discussed in greater detail in chapter 9 of the HMS FMP.

### *Gloucester, MA*

Gloucester is known as the oldest seaport in the United States, established in 1623. Currently, it is one of the main ports along the Atlantic coast with regard to commercial and recreational fisheries with much of the target catch being HMS species. While bluefin tuna landings dominate the market, a small number of boats target swordfish on the Grand Banks from this port. Because this emergency rule implements a limited time and area closure in the NED area and implements new gear restrictions, a small proportion of the vessel owners and operators may be impacted. Thus, the overall impacts on the community are expected to be low.

#### *New Bedford, MA*

New Bedford possesses one of the largest fishing fleets in the eastern United States and accounts for the second highest number of swordfish landed in Massachusetts. All of the pelagic longliners that land in New Bedford are large “distant water” vessels which follow swordfish throughout their migrations. In the summer and fall months, these vessels fish in the NED area and land their catch in New England ports. During the winter months, they fish in the Caribbean and ship their catch to the United States. Because of the nature of the fishery, researchers concluded that increased regulation of this fleet through time and area closures and gear modification could lead to longer trips and increased strain on family life. Some vessels might reflag and move overseas to enable them to continue to fish the NED area unregulated. Another option would be to leave for the Caribbean fishing grounds earlier than anticipated to avoid the new regulations. This would effect the broader community through a reduction in the demand for maintenance and supply of vessels and length of leave by family members. Even if the vessels fished outside of the time/area closure, there could still be a substantial negative impact on the amount of swordfish landed.

#### *Barnegat Light, NJ*

The Barnegat Light community is heavily dependent on its recreational and commercial fisheries as a source of income. It is known for its mid-Atlantic pelagic longline fishery which targets yellowfin and bigeye tuna for most of the year and swordfish for part of the year. Some of the fishermen from this area have become distant water operators, fishing in the NED area off Newfoundland, the waters off Greenland, as well as the Caribbean. One concern of the local residents is that the demise of commercial fisheries may transform the use of the waterfront, bringing residential development. The pelagic longline fleet in this area is under considerable strain due to increasingly stringent regulations, market difficulties, and problems in securing and retaining trained crew members. Many of the vessels are operating on thin profit margins which could be substantially impacted by requirements such as VMS, should that requirement become effective in the future.

#### *Wanchese, NC*

Approximately one third of the small businesses in Wanchese are commercial fishing or charter fishing related, demonstrating the reliance of the community on the marine environment. The mid-Atlantic pelagic longline fishery primarily targets swordfish, sharks, tunas, and dolphin.

Pressure on this sector of the longline fishery is substantial due to the difficulty hiring and managing crew for the vessels. It is difficult to switch to different fisheries due to restrictive regulations or lower prices and commercial retention limits. Researchers found that increased restrictions on swordfish and tuna species will lead to increased pressure on dolphin and inshore species as well as movement of longline assets overseas. Generally, the regulations implemented by this emergency rule should not have a substantial effect on this community due to the lack of boats fishing in the NED area.

### *Summary*

Based on the current information available to NMFS, the emergency rule is not expected to have a substantial social impact on the majority of the communities examined. Only the New Bedford area has a large number of boats that frequent the NED area to fish, and thus would be impacted heavily. The closed area could reduce a proportion of the swordfish landed per vessel, but a majority of the vessels have the capability to fish outside the closed area where relatively higher catches of swordfish occur. Thus, while the vessels active in the regulated area could potentially have reduced landings, NMFS believes that the limited duration of the emergency rule and the relatively small number of vessels that fish in the NED area mitigate any adverse social impacts.